

WHAT IS CLAIMED:

1. A sensor assembly, comprising:
 - a substrate with at least one acoustic wave resonator provided thereon, wherein said at least one acoustic wave resonator is configured to provide an
 - 5 electrical output signal indicative of an associated physical parameter;
 - a projection provided on and extending from a selected location on said substrate; and
 - a casing assembly for providing a sealed package around said substrate and components provided thereon;
 - 10 wherein at least a portion of said casing assembly forms a recessed surface area capable of flexing to interface with the projection provided on and extending from a selected location on said substrate.
2. The sensor assembly of claim 1, further comprising two additional acoustic wave resonators provided on said substrate.
3. The sensor assembly of claim 2, wherein said acoustic wave resonators are surface acoustic wave (SAW) resonators, and wherein said resonators are configured to provide output signals indicative of pressure and temperature to which said sensor assembly is subjected.
4. The sensor assembly of claim 1, further comprising an antenna coupled to said at least one resonator for facilitating the transmission of said electrical output signals therefrom.
5. The sensor assembly of claim 1, wherein said projection is formed on said substrate via photolithography.
6. The sensor assembly of claim 1, wherein said projection is attached to said substrate via an adhesive.
7. The sensor assembly of claim 1, wherein said substrate comprises quartz.
8. A sensor assembly, comprising:
 - a piezoelectric substrate with at least one acoustic wave resonator element

provided thereon, wherein said at least one acoustic wave resonator element is configured to provide an electrical output signal indicative of an associated physical parameter;

a projection provided on and extending from a selected location on said piezoelectric substrate;

a first casing portion for providing a rigid base to support said piezoelectric substrate; and

a second casing portion for providing a flexible lid configured for adjacent positioning to said first casing portion such that said first and second casing portions form an enclosure for said piezoelectric substrate and components provided thereon;

wherein a substantially flat indentation area is formed in said second casing portion, said substantially flat indentation area being configured to selectively interface with the projection provided on and extending from a selected location on said piezoelectric substrate.

9. The sensor assembly of claim 8, further comprising two additional acoustic wave resonator elements provided on said piezoelectric substrate.

10. The sensor assembly of claim 9, wherein said acoustic wave resonator elements are surface acoustic wave (SAW) resonator elements, and wherein said resonator elements are configured to provide output signals indicative of pressure and temperature to which said sensor assembly is subjected.

11. The sensor assembly of claim 8, further comprising an antenna coupled to said at least one resonator element for facilitating the transmission of said electrical output signals therefrom.

12. The sensor assembly of claim 8, wherein said substantially flat indentation area is at least about twelve square micrometers.

13. The sensor assembly of claim 8, wherein selected of said first and second casing assemblies and said projection comprise a metallic material.

14. A tire assembly, comprising:

a pneumatic tire structure;

a sensor assembly mounted to said pneumatic tire structure, said sensor assembly comprising:

5 a substrate with at least one acoustic wave resonator element provided thereon, wherein said at least one acoustic wave resonator element is configured to provide an electrical output signal indicative of an associated physical parameter;

10 a projection provided on and extending from a selected location on said substrate; and

 a casing assembly for providing a sealed package around said substrate and components provided thereon;

 wherein at least a portion of said casing assembly forms a recessed surface area capable of flexing to interface with the projection provided on and extending from a selected location on said substrate.

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15. The tire assembly of claim 14, wherein said sensor assembly further comprises two additional acoustic wave resonator elements provided on said substrate.

16. The tire assembly of claim 14, wherein said acoustic wave resonator elements are surface acoustic wave (SAW) resonator elements, and wherein said resonator elements are configured to provide output signals indicative of pressure and temperature to which said sensor assembly is subjected.

17. The tire assembly of claim 14, further comprising an antenna coupled to said at least one resonator element for facilitating the transmission of said electrical output signals therefrom.

18. The tire assembly of claim 14, wherein said casing assembly comprises a first casing portion for providing a rigid base to support said substrate and a second casing portion for providing a flexible lid configured for adjacent positioning to said first casing portion such that said first and second casing portions form an enclosure

5 for said substrate and components provided thereon.

19. The tire assembly of claim 18, wherein said recessed surface area is formed in said second casing portion.